

## THE "AMERICAN MOTH"

WHAT the makers describe as a "light 'plane for heavy duty" has recently been put on the American market by the Vulcan Aircraft Co. of Portsmouth, Ohio. This machine, which is called the "American Moth," is a two-seater, high-wing monoplane of undoubtedly pleasing lines, and is selling at \$2,500. It is intended for business or pleasure and for club use, and was designed by Mr. John Pavlecka.

The fuselage is of welded steel tube construction, rigidly braced—without any use of wires—so as to obviate the necessity for frequent inspection and truing up. It is of rectangular section at the nose, trapezoidal at the cockpits, tapering thence to a vertical knife-edge at the rear. The engine mount, which is detachable by means of four pins, is of steel tube, welded, behind which is an aluminium fire wall.

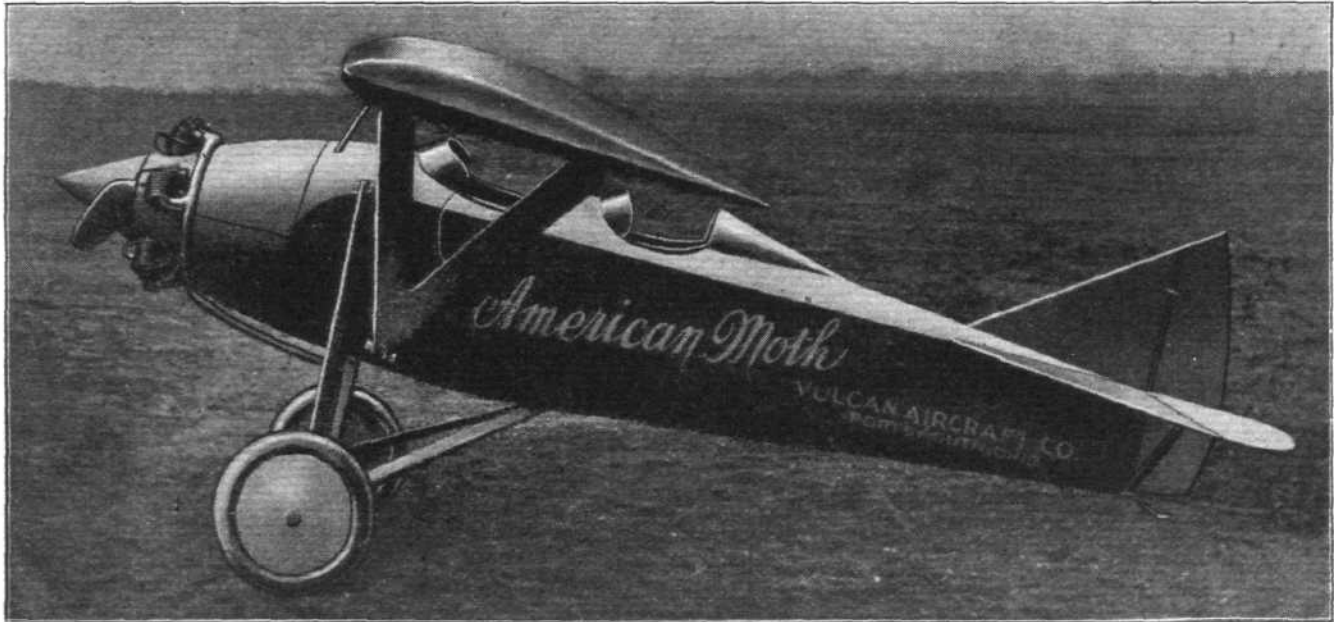
The cockpits are arranged in tandem, the front one (below the wing) being accessible by means of a door and steps, located on the port side of the fuselage; steps on the same side of the fuselage are provided for the rear cockpit. Both cockpits are upholstered in imitation leather, and plywood is used for the flooring. Dual control is provided, of the conventional stick-and-pedal type. Either set of controls can, if desired, easily be rendered inoperative by removing one of the sticks and disconnecting the pedals—a matter of removing

of a high-lift section and covered with fabric. They have an area of slightly more than 12 sq. ft., thus contributing about 80 lbs. of lift to the machine at a very slight increase in resistance.

In designing the tail unit careful consideration was given in providing surfaces of generous proportions, and at the same time in keeping the weight and resistance down to reasonable figures. Spars and edges are of steel tube, and the ribs are of sheet steel, formed to section and lightened. All joints are welded, and spars are reinforced where the horns are attached. The vertical surfaces are internally braced, while the stabiliser and elevator are braced by means of a streamline section strut on each side.

The stabiliser is adjustable, through a range of 4° plus and 2° minus, by means of a lever and ratchet located on the port side of the rear cockpit. Control is by means of a duralumin push rod, and the machine can be flown safely without using the elevator control—although, of course, the real purpose of the adjustable tail is to vary the trim of the machine at will.

Elevator control is by means of a large duralumin tube directly connected to the rock shaft unit and the elevator horn, thereby eliminating unnecessary working parts and constant attention or adjustment. The elevator horn is



THE "AMERICAN MOTH" MONOPLANE: Side view of an American light plane, a two-seater sport or training machine fitted with a 60 h.p. Le Blond 5-cyl. air-cooled radial engine.

three pins conveniently placed. Spring clips provided on the sides of each cockpit serve to hold the sticks when not in use.

The high-lift wing unit comprises a short centre section and two outer panels braced by V-form lift struts. The centre section, which contains the fuel tank, is supported above the fuselage by a cabane of streamline steel struts. As will be seen from the general arrangement drawings, the wing panels are tapered, not only in plan form, but from the point of attachment of the bracing struts to wing-root and wing-tip respectively, thus giving the utmost aerodynamic and structural efficiency.

Wing spars are of best selected spruce, of two-piece laminated box type, and are solid sections at points of location of important wing fittings. A very rigid wing structure is obtained owing to the large depth of spars, in conjunction with the double drag bracing tying the tops and bottoms of the spars together. Drag bracing is by means of duralumin tube struts and hard wire, tension members in form of Pratt truss; the wires are doubled. The ribs are of sheet duralumin. Ailerons, of ample proportions and of similar construction to the wings, are hinged to auxiliary spars so as to make an airtight joint. They are operated by means of cables attached to the rock-shaft lever which actuate duralumin push rods within the wings, thence by bell cranks to the aileron horns.

The V lift struts are round steel tubes, faired in with ribs

located inside the fin to reduce resistance, and a pyralin inspection door is provided. The rudder is actuated by means of flexible steel cables, between the pedals and the horn, no pulleys being required.

The machine is covered with Grade A fabric, slip-on type, sewed in place, and metal members are wrapped with tape to protect the covering. All covering is given a finish of five coats of clear dope and two of lacquer.

An undercarriage of the split axle-cum-rubber cord shock absorber type is fitted, well forward, and with a wide track (6 ft.). It has been designed for the use of brakes, which are supplied as optional equipment. The wheels are 24 in. by 3 in., wire spoke type, with aluminium disc streamline covers. The tail skid is of the leaf spring variety. The shock-absorber struts and axles are of steel tube faired to streamline form, while the radius struts are streamline steel tubes.

The power plant consists of a Le Blond 60 h.p. 5-cyl. air-cooled radial engine—or a 90 h.p. 7-cyl. model of the same make—but the 60 h.p., 80 h.p. Anzani, and the 70 h.p. Ryan-Siemens engines can also be installed. The engine and cockpits are well cowled with heavy sheet aluminium, while the exhaust is led through a collector ring which outlets below the fuselage. The Hartzell airscrew is equipped with a spinner hub and aluminium nose cap.

Fuel is fed by gravity from the 25-gallon tank in the centre wing section, and a 3-gallon oil tank is located in front of the fire wall just over the engine mount.